

REMARKS

Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

Upon entry of the above amendments, claims 1-3, 5-8, 10 and 11, will be pending.

Claim 1 is amended to correct the errors inadvertently introduced in the Preliminary Amendment and also to add the accepted Markush terminology.

The dependency of claim 5 is corrected to no longer depend from cancelled claim 4.

Claim 9 is rewritten in independent form as Claim 11.

Accordingly, no new matter is introduced.

The amendments to claim 1 address and remove the formal rejections under 35 USC 112, second paragraph.

Claims 1-3 and 5-10 stand rejected under 35 USC 103(a) as unpatentably obvious over McGraw et al (US 4,851,144) ('144) or Ward et al (RE 33,658) ('658).

Applicants respectfully disagree and traverse this rejection for at least the following reasons.

As described in the specification, the Applicants discovered that the combination of a methyl end-capped polyalkylene glycol (having the formula set forth in the claims) in combination with a certain class of ester, is able to overcome the problem of water entrainment whereby stable emulsions are formed which adversely affect the lubricant performance as well as adversely affecting the ability to measure lubricant levels (see specification on page 1, lines 23-28).

As evidence of the unique and previously unknown ability of the present compositions to solve this problem, reference is made to the examples and comparative examples in the specification.

For instance, in Example 1, (beginning on page 3), as shown in Table 1 (page 4), the lubricant compositions according to the present invention do not form an emulsified layer. In contrast, in Example 2 (beginning on bottom of page 4) Comparative Samples 11-13, all based on commercially available lubricant compositions (blends of butanol-initiated propoxylated with various esters), formed stable emulsions.

Example 3 provides a comparison between Sample 3 (invention) and Sample 11 (comparison) with regard to the effect of water on viscosity and corrosivity. The results were that with Sample 3, the viscosity change was only 0.6, whereas for Sample 11, the change was 3.1, a more than 5-fold difference. The acid value (mg KOH/g) changes were 0.01 (Sample 3) versus 0.54 (Sample 11), a fifty-fold difference.

Example 4 shows that lubricant compositions according to the invention are less susceptible to water-uptake than compositions outside the scope of the invention while Example 5 shows that the instant compositions are substantially more (25% vs. 10%) more miscible with mineral oil. Example 6 shows that as compared to lubricants using other than the methyl end-capped polyalkylene glycol, the pour point (low temperature fluidity) is increased by about 4 °C (from -38° to -42° C).

Neither of the cited references '144 or '658, have any disclosure or suggestion of the specific combination of polyalkylene glycol and ester as claimed herein, much less, any recognition of the ability of the instant compositions to be resistant to formation of stable emulsions with water or the other advantages discussed herein.

Thus, looking at '144, it is seen that this reference discloses lubricant base oil compositions for compression refrigeration, wherein a mixture of a diester or polyol ester and a polyether polyol is used. The polyether polyol may be a monoether, where R₂ is hydrogen (non-end capped) or a diether (R₂ is alkyl of 1 to 6 carbons). The patentees do not distinguish between non-end capped and end-capped species and provide no discussion regarding the selection of R₂. The examples of this patent are all based on non-end capped polyalkylene glycols.

As such, there is no disclosure or suggestion leading the practitioner to the selection of component (1) wherein n is 0, R₂ is methyl and Z is derived from methanol, ethanol, propanol or butanol; and, simultaneously, select component (2) from a polyol ester or an aliphatic diacid ester.

Furthermore, with regard to claim 9, now independent claim 11, there is no disclosure or suggestion, whatsoever, leading the practitioner to incorporate a non-silicone antifoaming agent.

Therefore, the rejection of claims 1-3 and 5-10, as unpatentably obvious over McGraw '144, is respectfully traversed.

The disclosure of '658 is essentially the same as that of '144, notwithstanding the somewhat different representation of the polyalkylene glycol compound. Here again, all of the examples are based on non-end capped polyalkylene glycol (specifically, propylene glycol). Therefore, one skilled in the art, reading this disclosure, would not have any knowledge or expectation that the specific combination disclosed and claimed herein has, unlike other combinations, within the scope of the disclosure, but outside the range of subject matter being claimed herein, has the ability to resist formation of stable emulsions with water, hence, improved performance as a lubricating agent, especially for use in air compressors.

compressors. Also, there is no disclosure or suggestion of anti-foam agents, much less, non-silicone antifoam agents.

Therefore, the rejection of claims 1-3 and 5-10, as unpatentably obvious over Ward '658, is respectfully traversed.

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, he or she is kindly requested to contact the undersigned at the telephone number listed below.

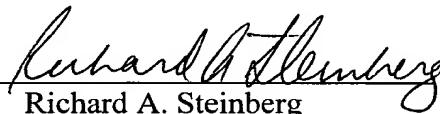
Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached Appendix is captioned **"Version with markings to show changes made"**.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

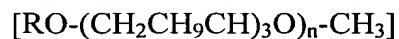
IN THE CLAIMS:

New claim 11 has been added.

The claims have been amended as follows:

2. (Twice Amended) A lubricant composition comprising:

(1) a [polya;ky;ene] polyalkylene glycol having the formula



where R is an alkyl group with 1-4 carbon atoms and $n = 1$ to 35; and

(2) an ester selected from the group consisting of a polyol ester, an aliphatic diacid ester, an aromatic diacid ester or a trimellitate.

5. (Amended) A lubricant composition as claimed in claim [4]1 wherein the ester is [either] a polyol ester or an aromatic diacid ester.